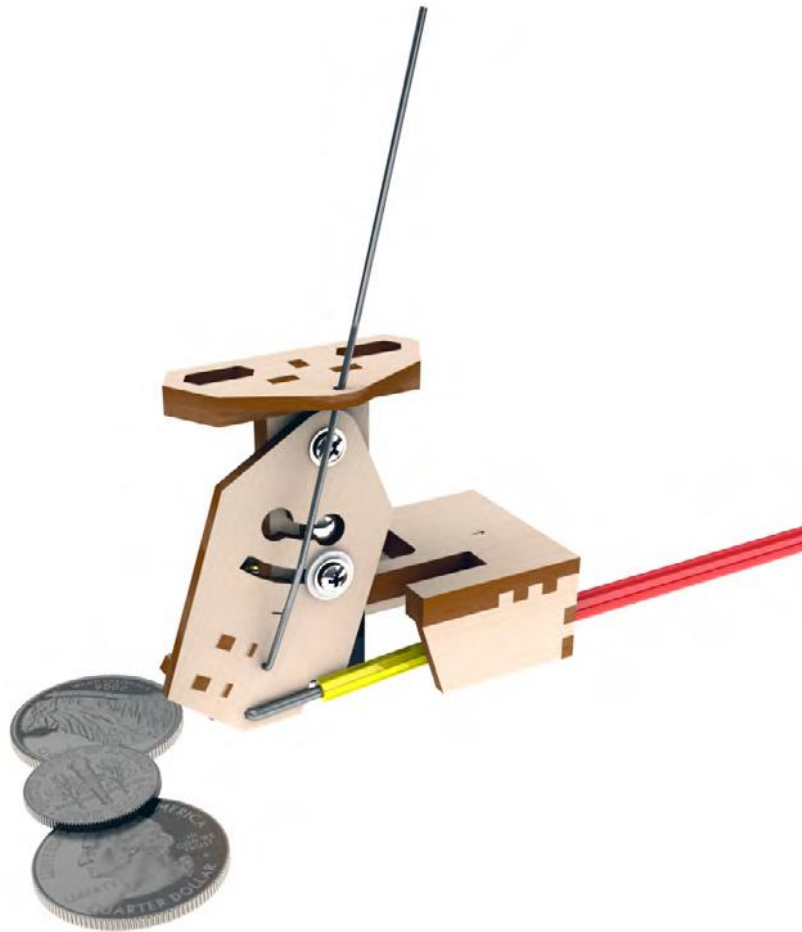


INSTALLATION INSTRUCTIONS FOR BULLFROG SWITCH CONTROLLERS

BY BILL HUEBNER

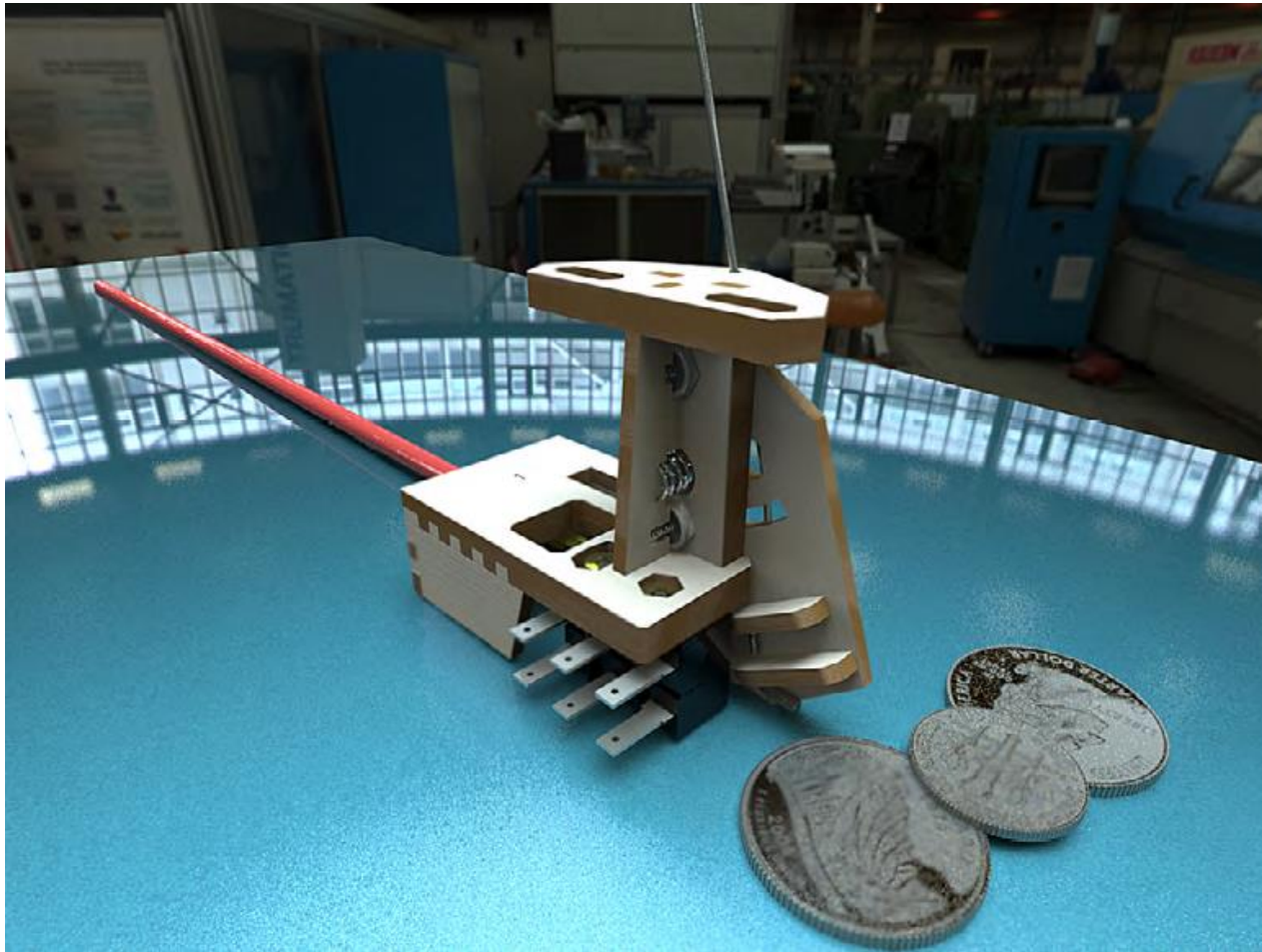
WHAT IS A BullFrog TURNOUT CONTROL?



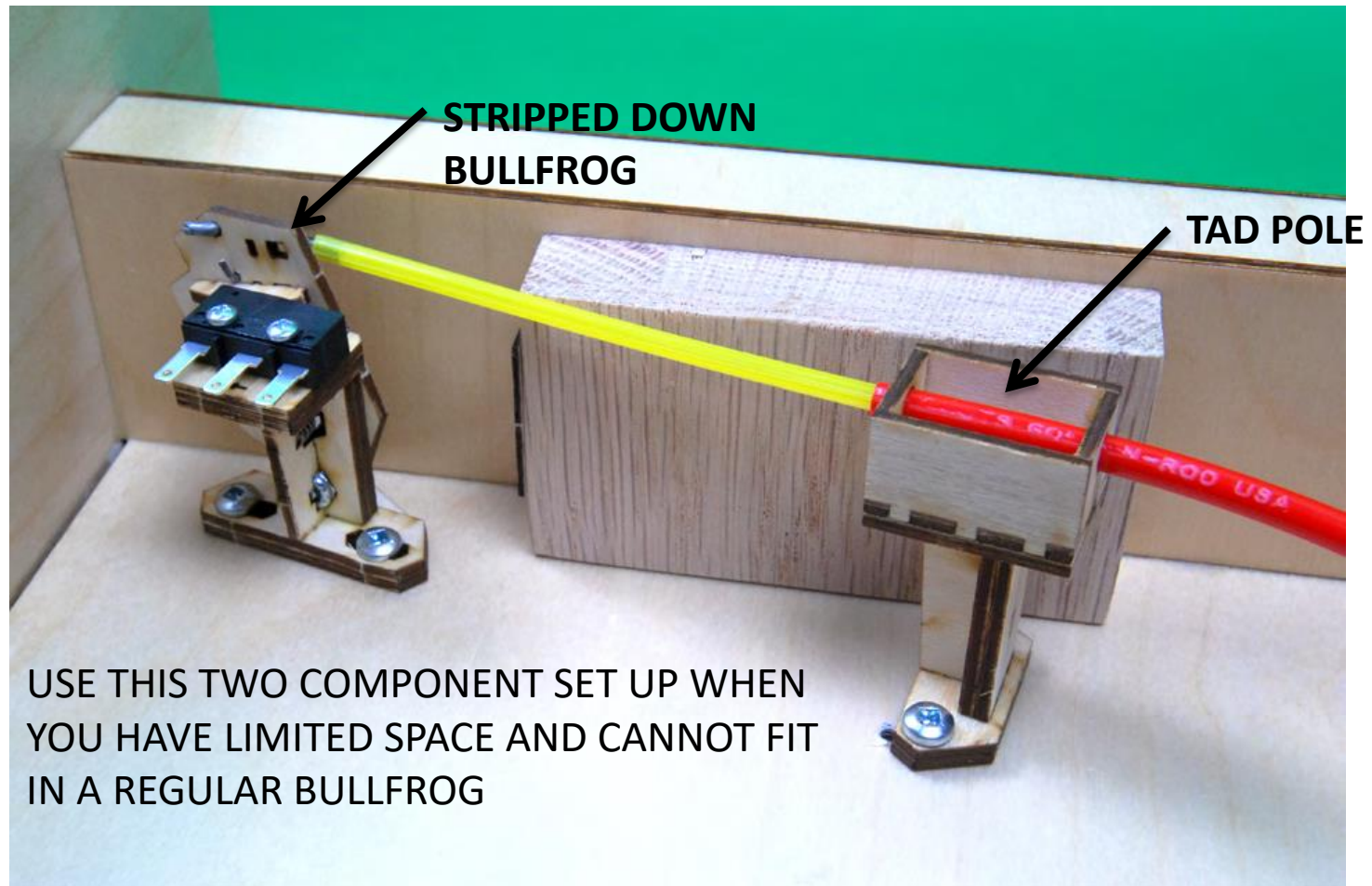
BullFrog Turnout Controls

- Manufactured by Fasttracks
- Registered trade mark of Fasttracks
- See, www.handlaidtrack.com
- Cost: \$6.30 per unit if buying lots of 10
- Need “RC” control cables in addition to the BF
- Includes both a mechanical switch and an electrical switch which moves both the points and the polarity of the frog

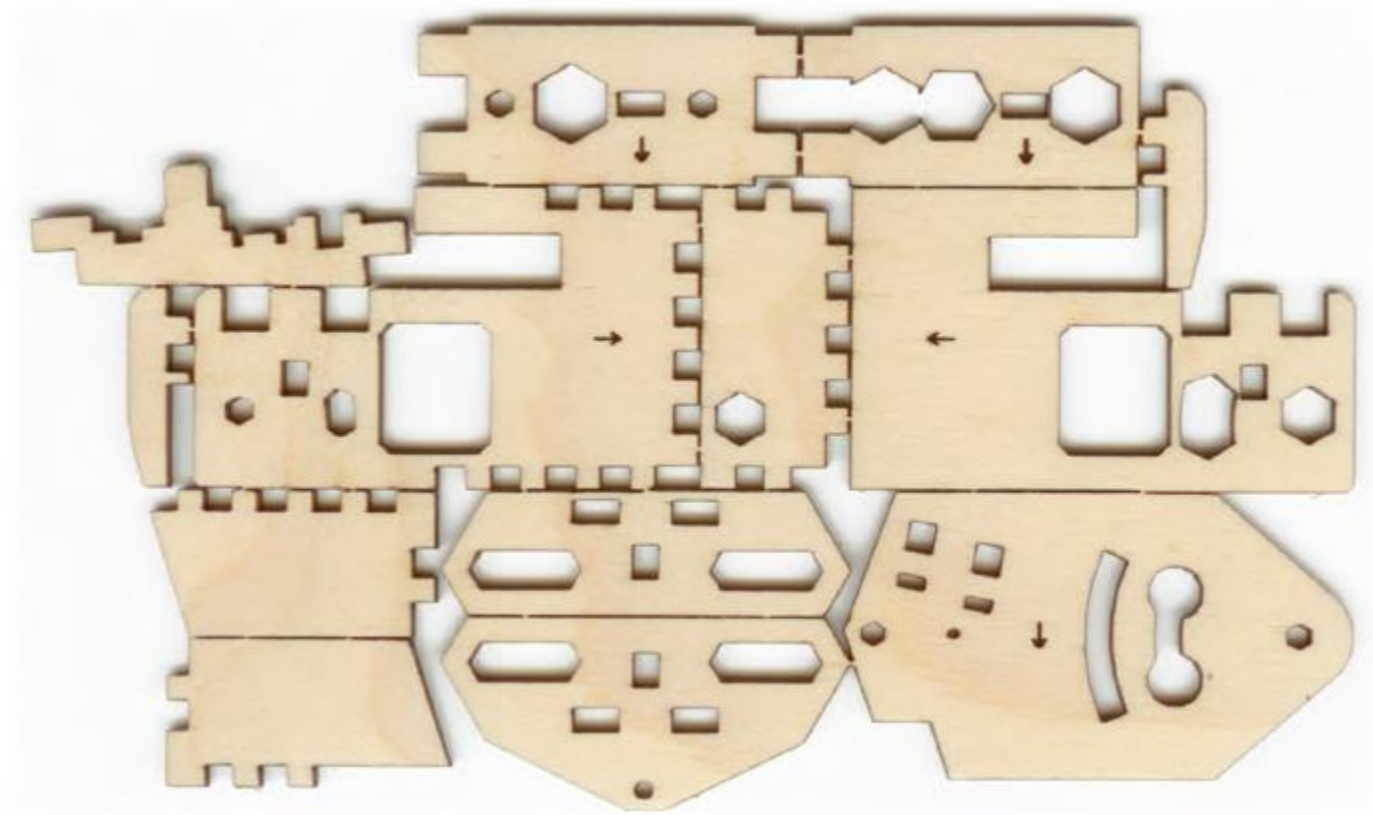
BULLFROG CONTROLLER



THE TAD POLE CONNECTED TO STRIPPED DOWN BULLFROG FOR REMOTE TURNOUT CONTROL

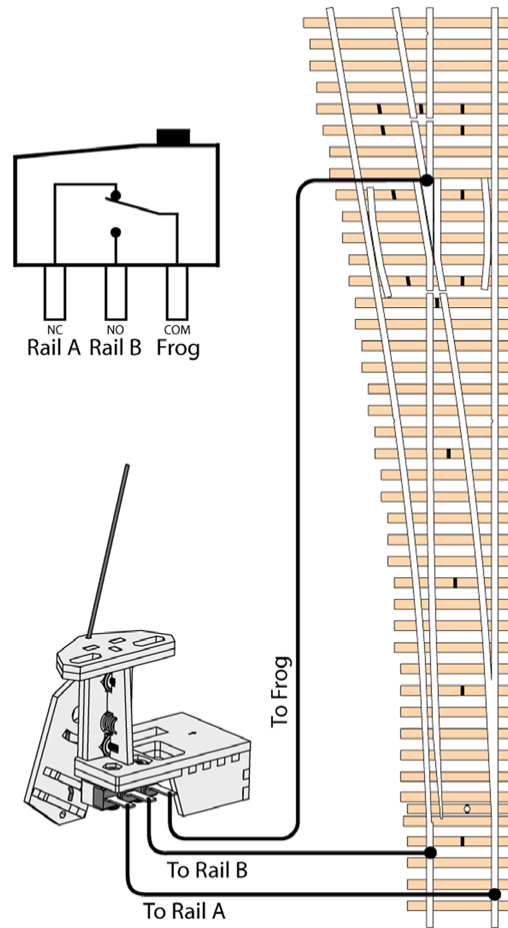


LASER CUT WOOD COMPONENTS IN A BULLFROG KIT

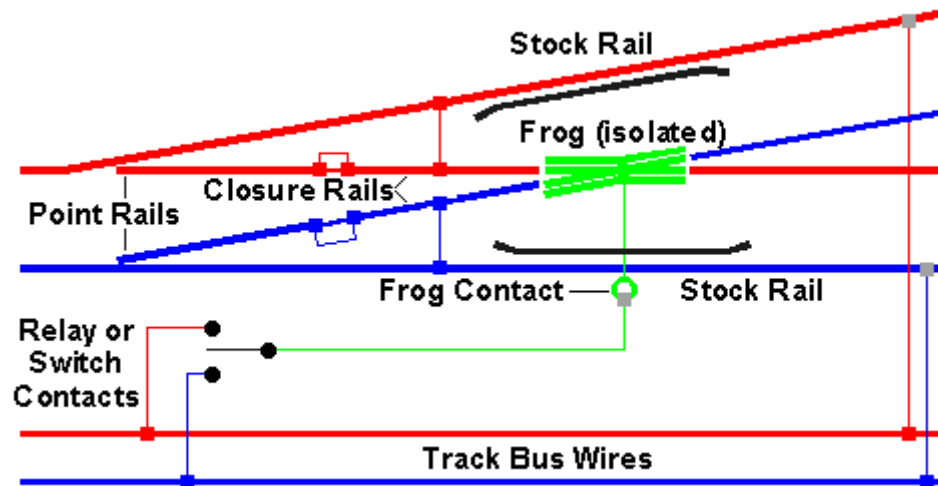


[Play Video](#)

BULLFROG CONTAINS AN ELECTRICAL SWITCH TO CHANGE FROG POLARITY



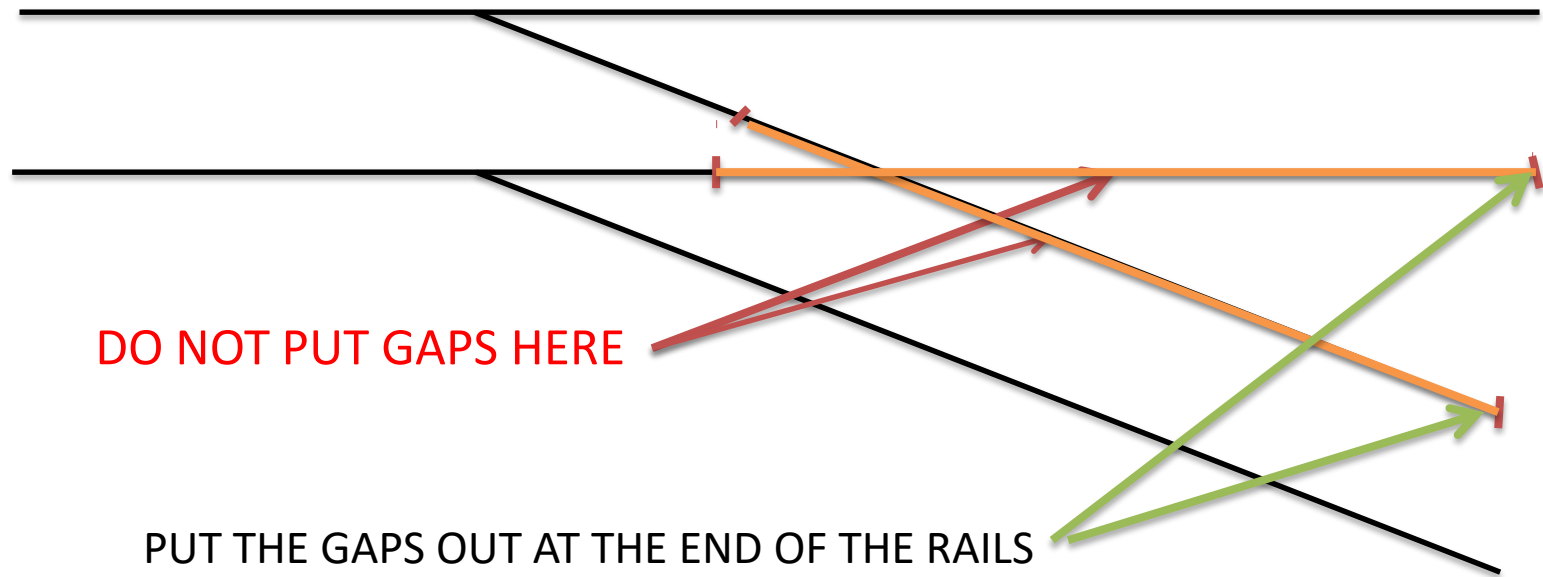
WHY YOU NEED TO CHANGE THE POLARITY OF THE FROG WHEN USING METAL FROGS



SOME MODELERS USE INSULATED OR NON-CONDUCTING FROGS. THIS MAY WORK FOR SMALL SIMPLE LAYOUTS WITH DIESELS, BUT IT LIMITS THE TYPE OF ENGINES YOU RUN AND MAY CAUSE PROBLEMS WITH ENGINES STALLING ON THE SWITCH. **BEST PRACTICE IS TO HAVE A WIRE FEEDER TO EVERY RAIL (REGARDLESS OF HOW SMALL THE PIECE OF RAIL) – DO NOT RELY ON RAIL JOINERS!**

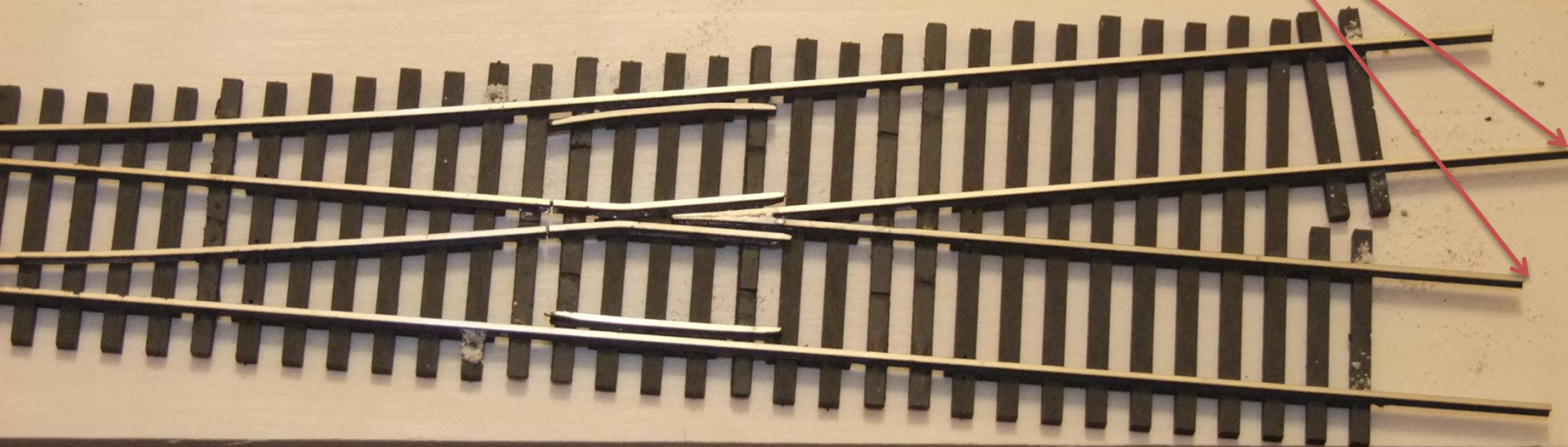
WHERE TO PUT GAPS AROUND THE FROG

- YOU DO NOT HAVE TO PUT THE OUTSIDE GAPS NEAR THE FROG, IT IS BETTER TO JUST INSULATE THE ENDS OF THE RAIL.



PUT THE GAPS OUT AT THE END OF THE RAILS
LEADING OUT OF THE FROG, ALWAYS INSULATE
BOTH RAILS COMING OUT FROM THE FROG

INSULATED GAPS ARE OUT HERE



INSTALLATION SEQUENCE

- 1. Before installing a turnout, make sure there is a #56 hole in the center of the trow bar.
- 2. Spike the turnout to the roadbed. Repeat the places on the turnout where you spike the turnout down.
- 3. Once down, take a sharp skinny black marker and outline the head ties. This is to allow you to quickly replace it after you drill the throw rod hole.

- 4. Before lifting up the turnout, hold the points in the middle and drill a small hole through the throw bar and into the roadbed.
- 5. Lift off the switch and circle with a marker where the small center hole is. Use this to start the ¼" diameter hole through the roadbed.

Important: You cannot drill from below while a turnout is in place. I've tried and you will most likely damage the switch.

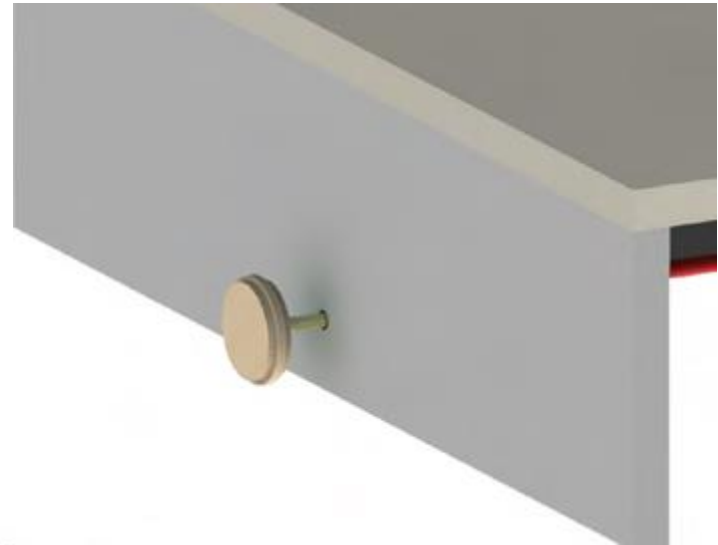
- 6. Do not replace turnout until the BF is installed.
- 7. Now install the bullfrog from below. First mark where the screws need to go – use the plastic jig for this purpose.

- 8. Drill the pilot holes for the bullfrog screws.
- 9. Put the bullfrog in place, but first screw the throw rod in the middle position so it points straight up the $\frac{1}{4}$ " hole.
- 10. Now move back on the top side and replace the turnout with the hole in the throw bar going over the throw rod coming up from below. You can cut back the piano wire.
- 11. Now re-spike the turnout back into its original position re-suing the original spike holes. Keeping the stock rails around the points tight is the most important part.

- 12. Unscrew the screw holding the piano wire in place, and rock the Bullfrog back and forth to make sure the points are pushed tight into the stock rails.
- 13. Now install the control rods, extend the inner or yellow portion about $\frac{1}{2}$ " outside the bench work. This will allow a gap between the side of the layout and the knob. Look at Fast Track documents to help with this part.
- 14. To wire the Bullfrogs, just connect the the black and white wires to your bus wire (but you need to check or run an engine through both sides of the switch before you make a permanent connection. But the frog or green wire always gets connected to the switch frog.

- 15. When I build my BullFrogs, I use No. 18 solid wire, with black, white and green insulation. The green is for the frog, and the others connect to your bus wires. Solder these to the small electrical switch during the assembly process – not after they are installed. You do not want to be soldering these underneath the layout. And always use the same colors so you can easily test for shorts.
- 16. The key is to repeat all of these procedures. This way you have less chance of errors whether mechanical or electrical.

CONTROL ROD CONNECTIONS

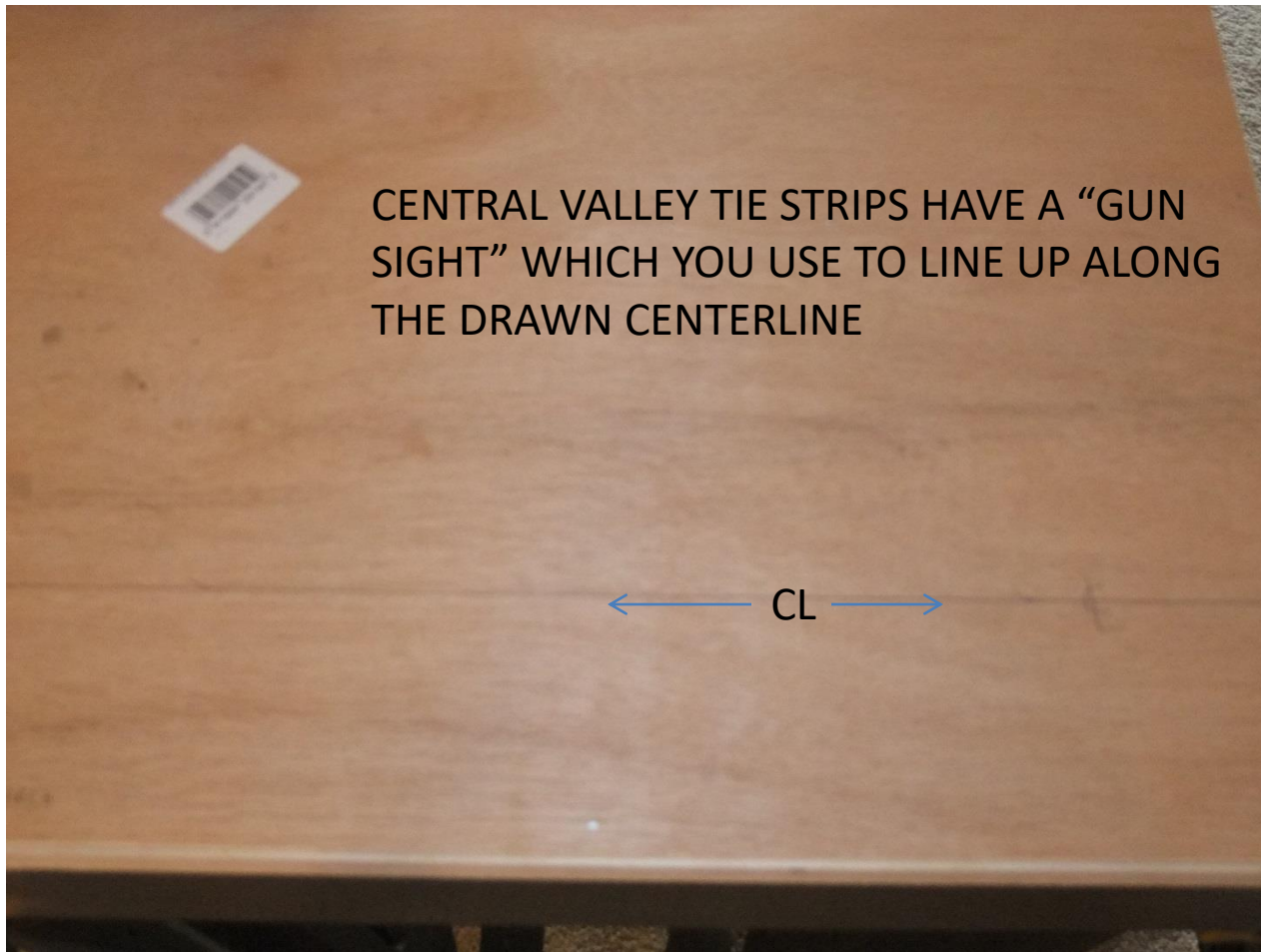


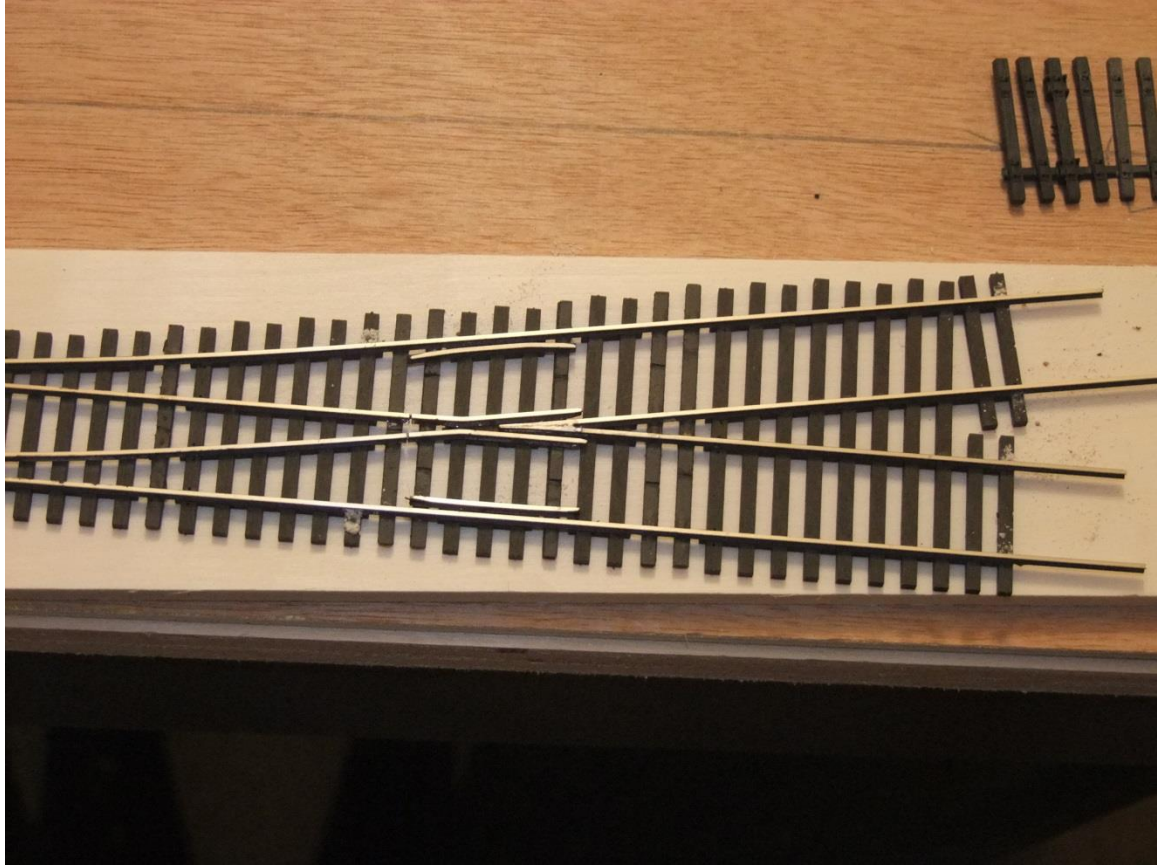
Z BEND
CONNECTOR

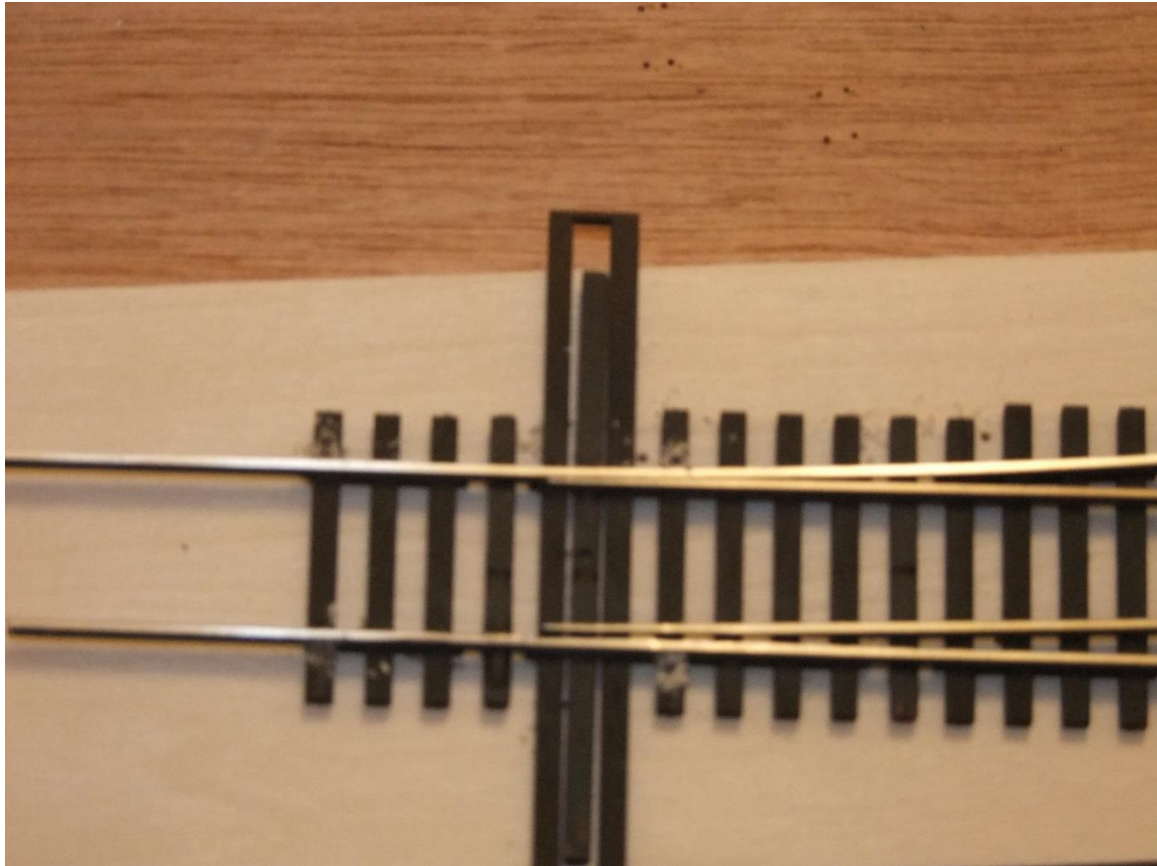


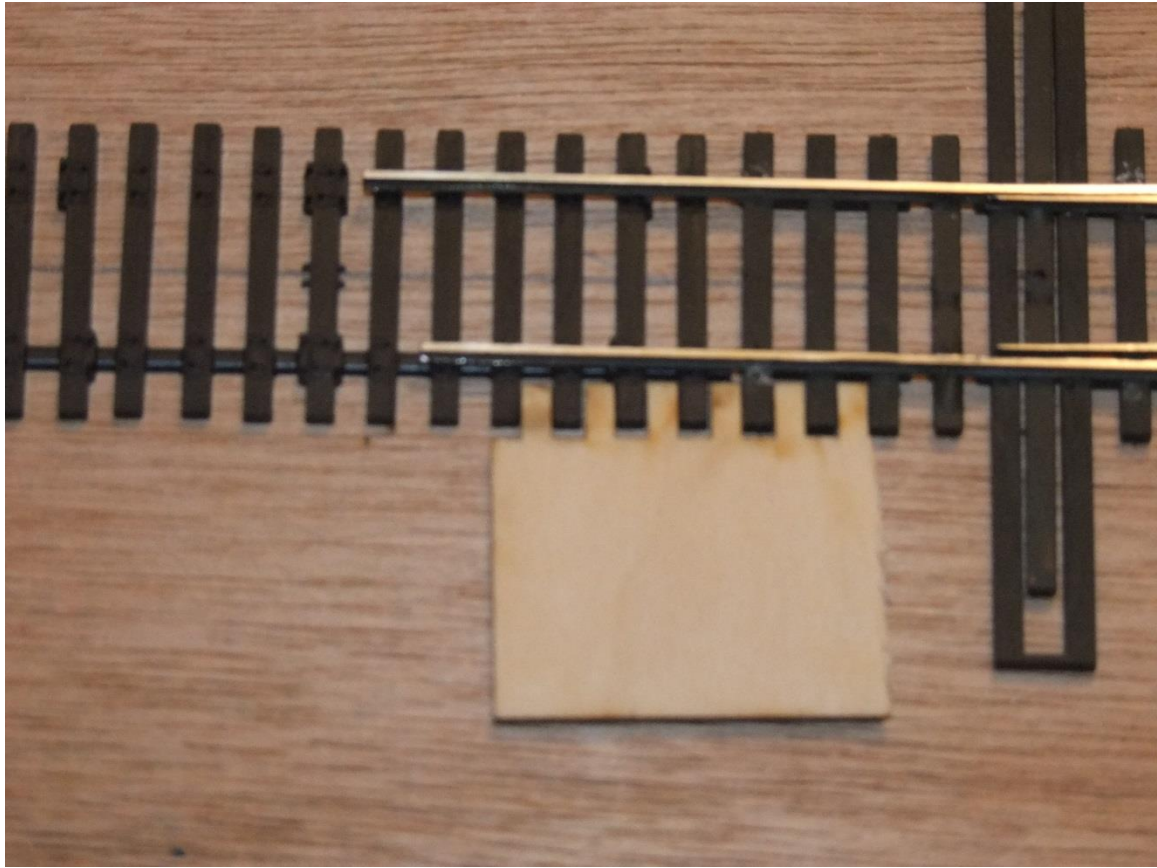
THE END OF THE INNER OR
YELLOW CONTROL ROD GETS
SCREWED INTO THE END OF
THE "Z BEND CONNECTOR"

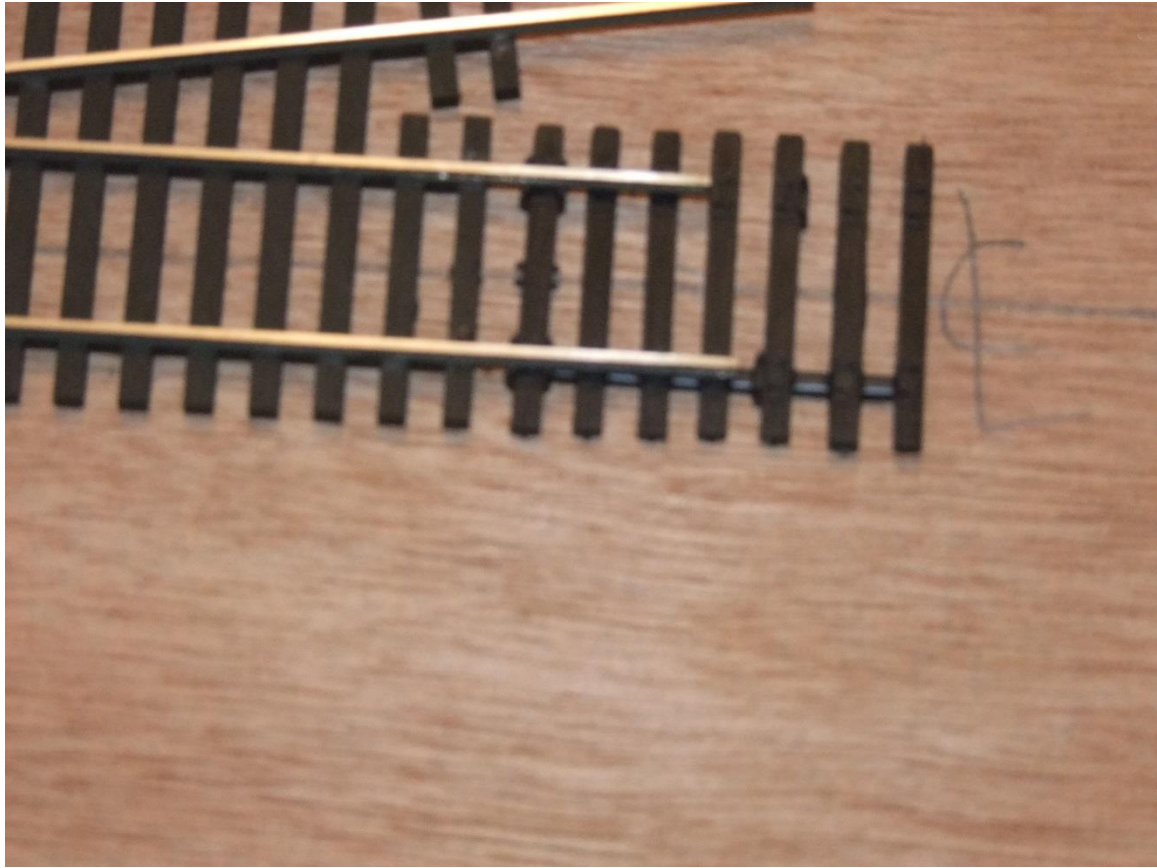
LUAN BASE WITH THE CENTER LINE OF THE TRACK DRAWN ON

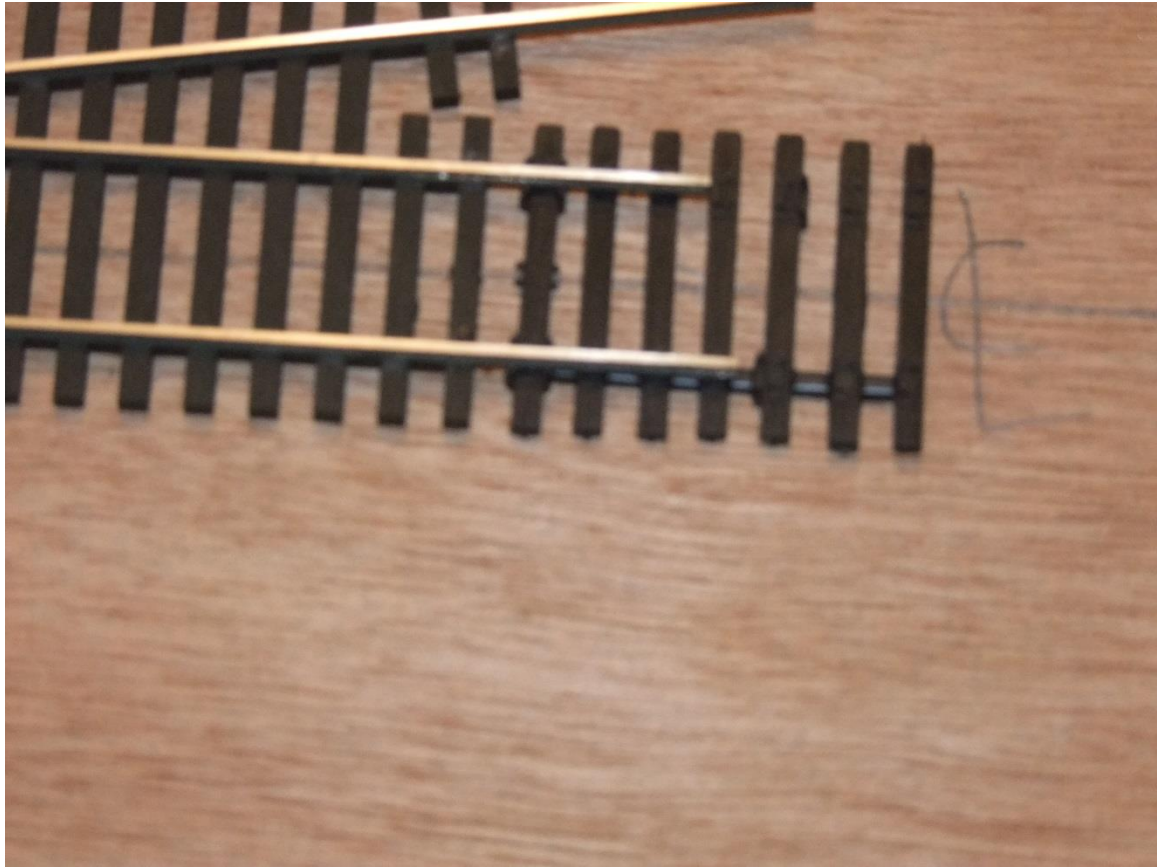


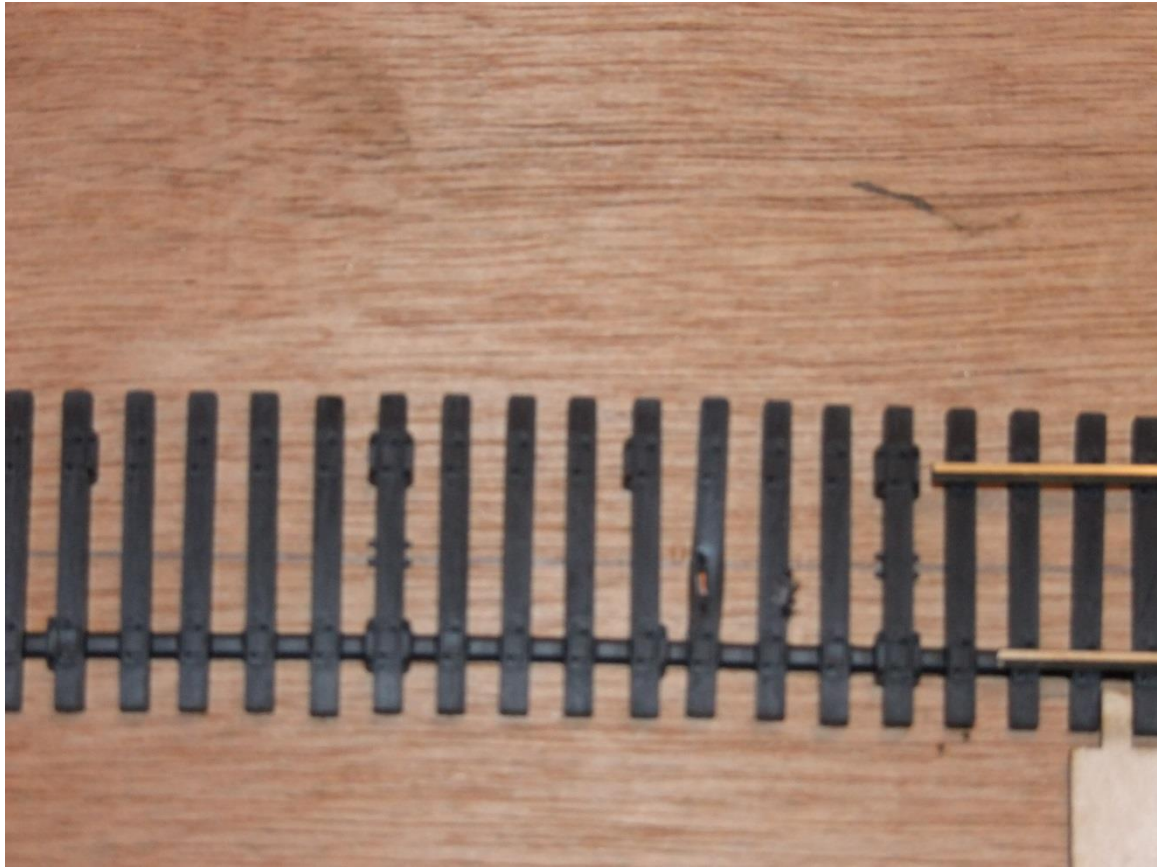


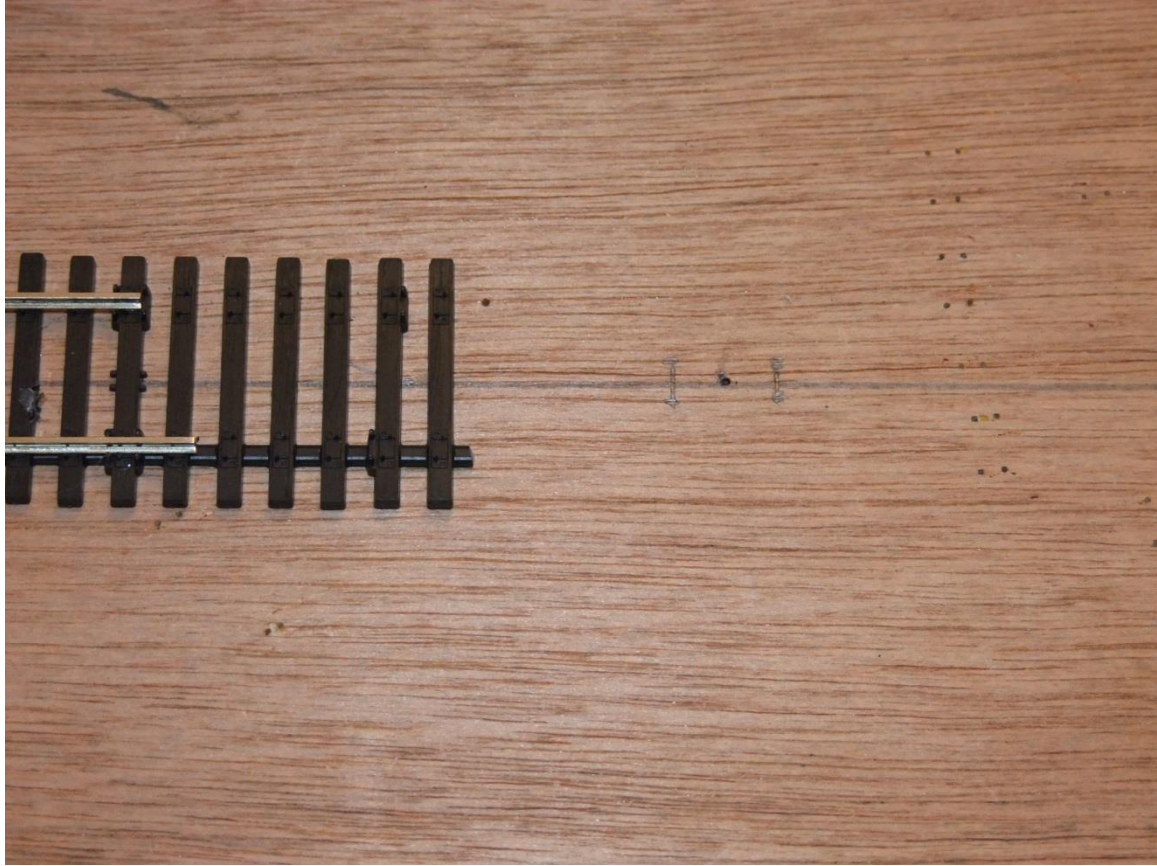


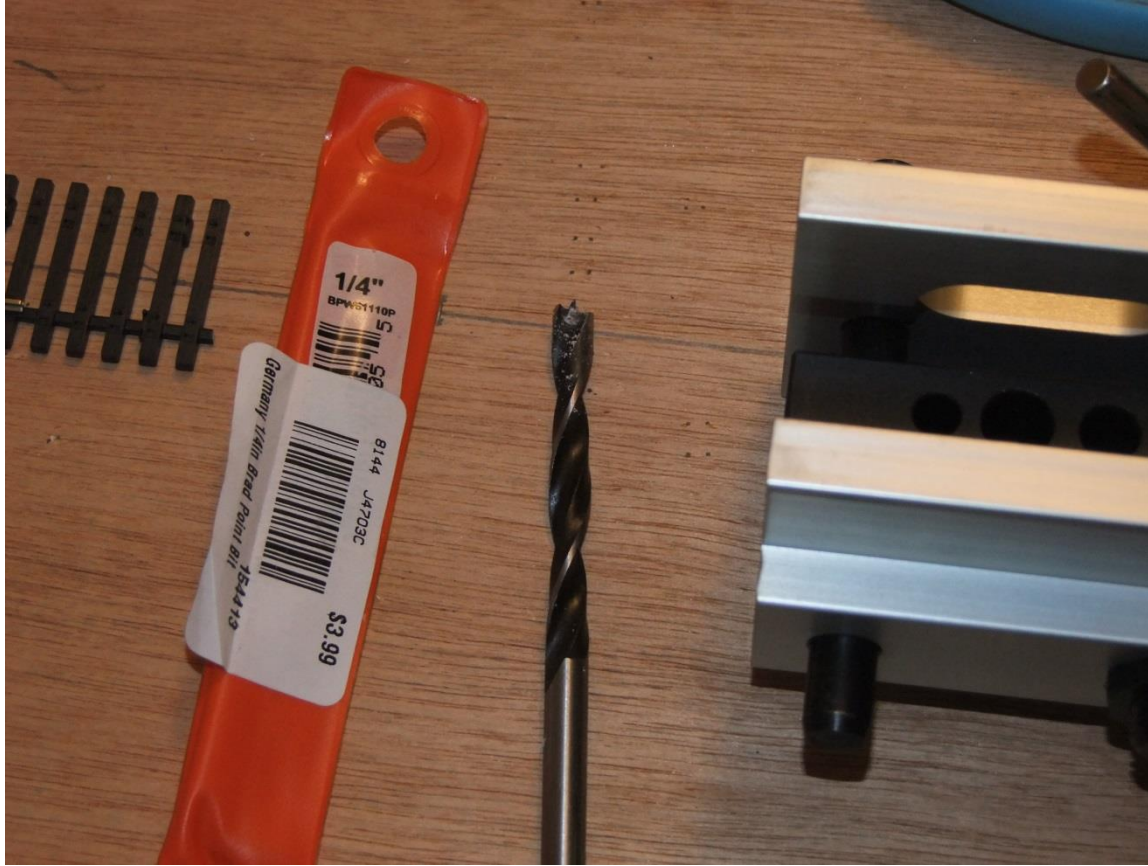


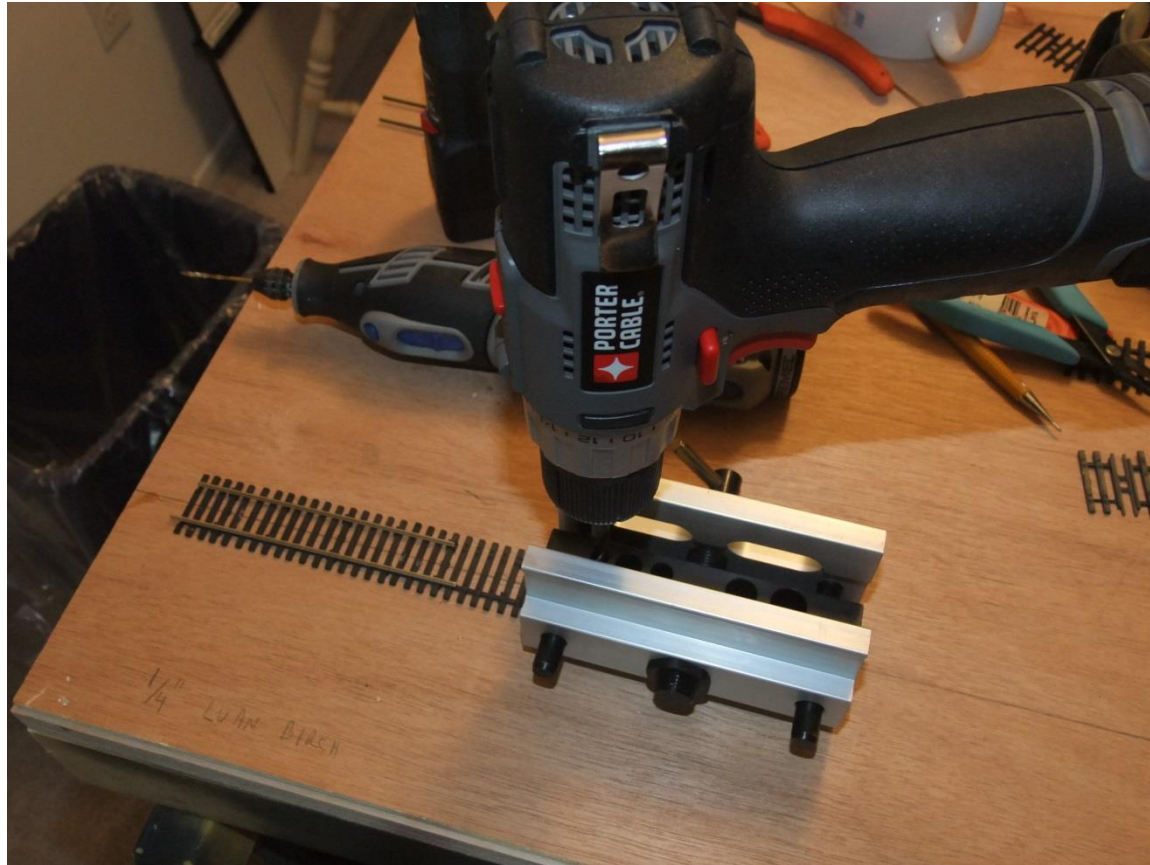


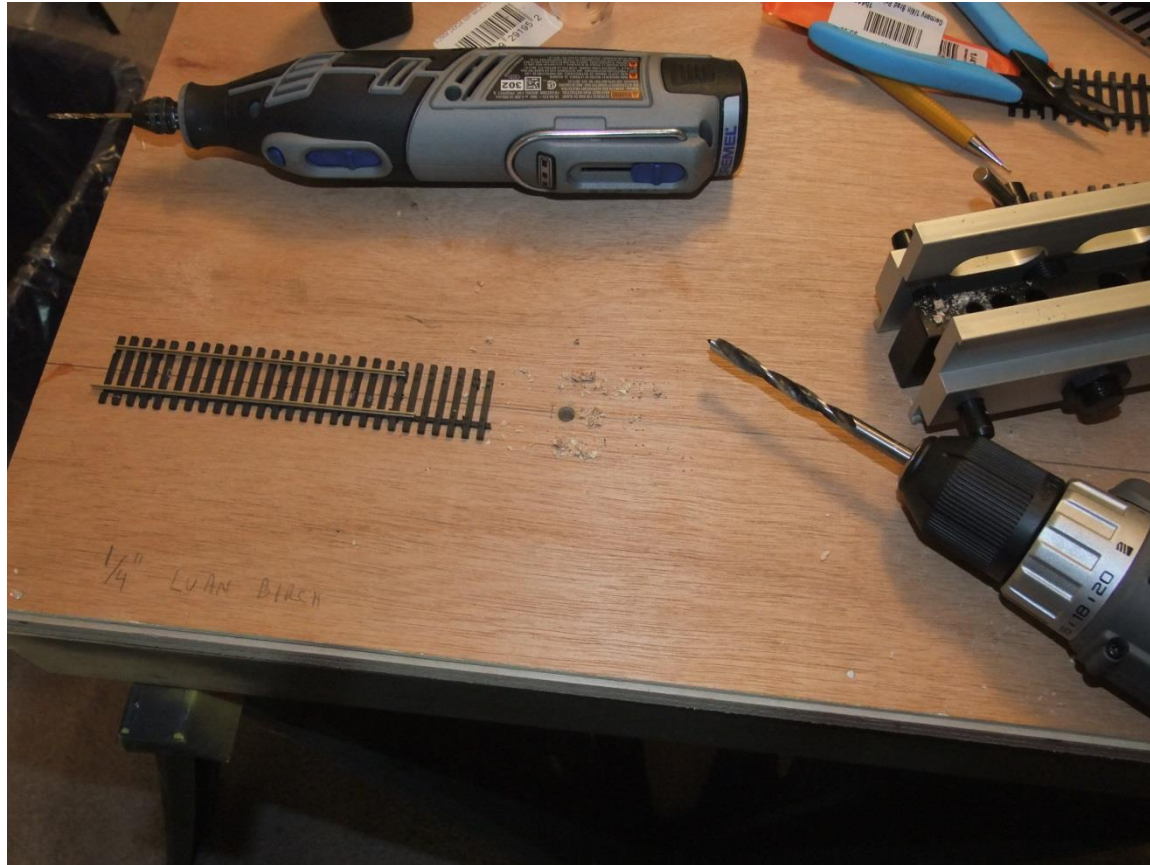


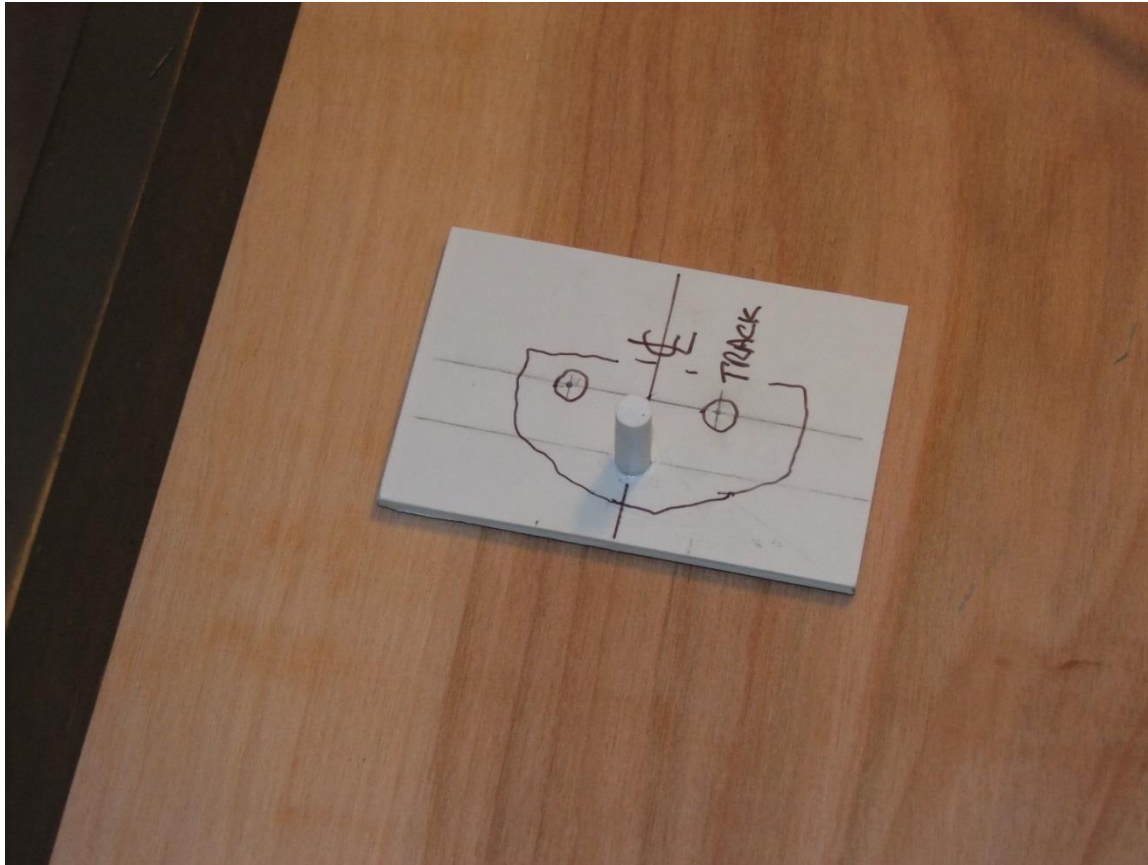


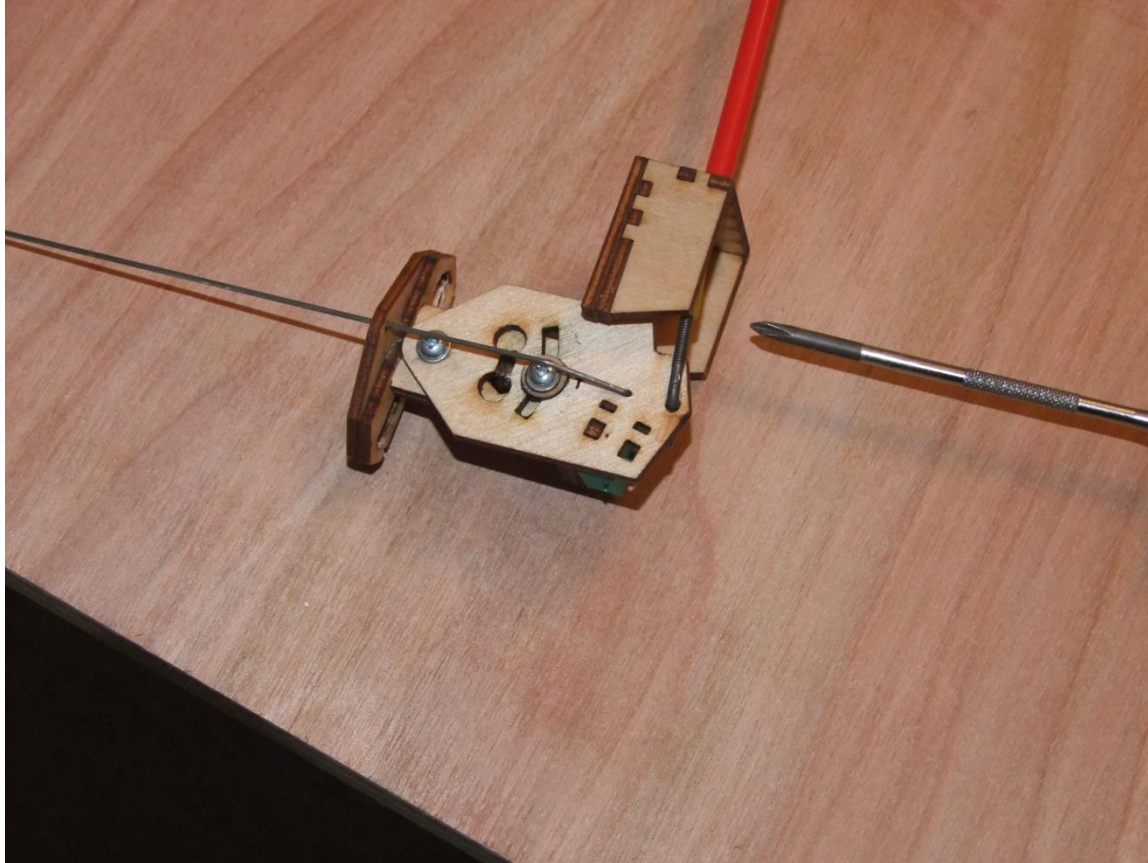














Clear Zinc Plated

McFEELY'S
SQUARE DRIVE SCREWS

Janesville, WI 53546
1-800-443-7937

8FMJ2

100

#6 X 5/8

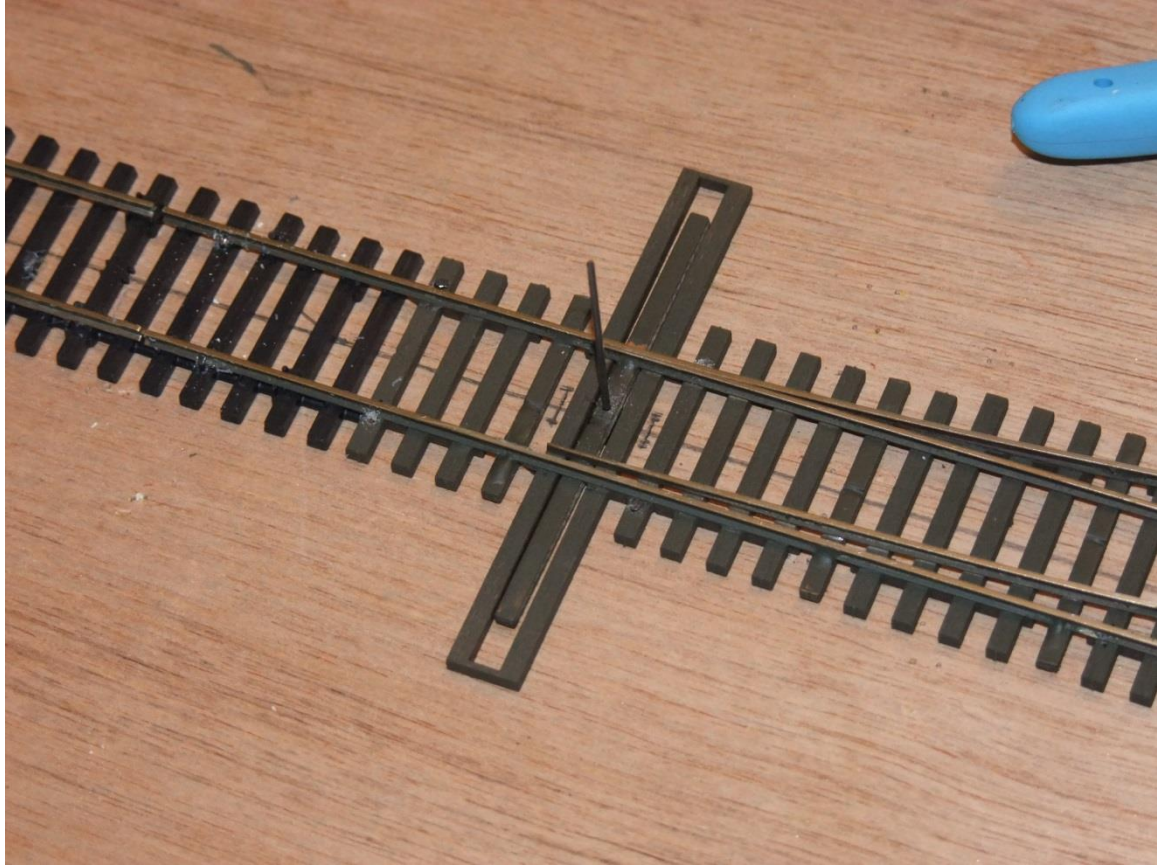
Truss Head
#2 Combo Recess
Clear Zinc Plated

USA / Taiwan

Lot # 031913







StripStyrene

Item No. Loc. Code

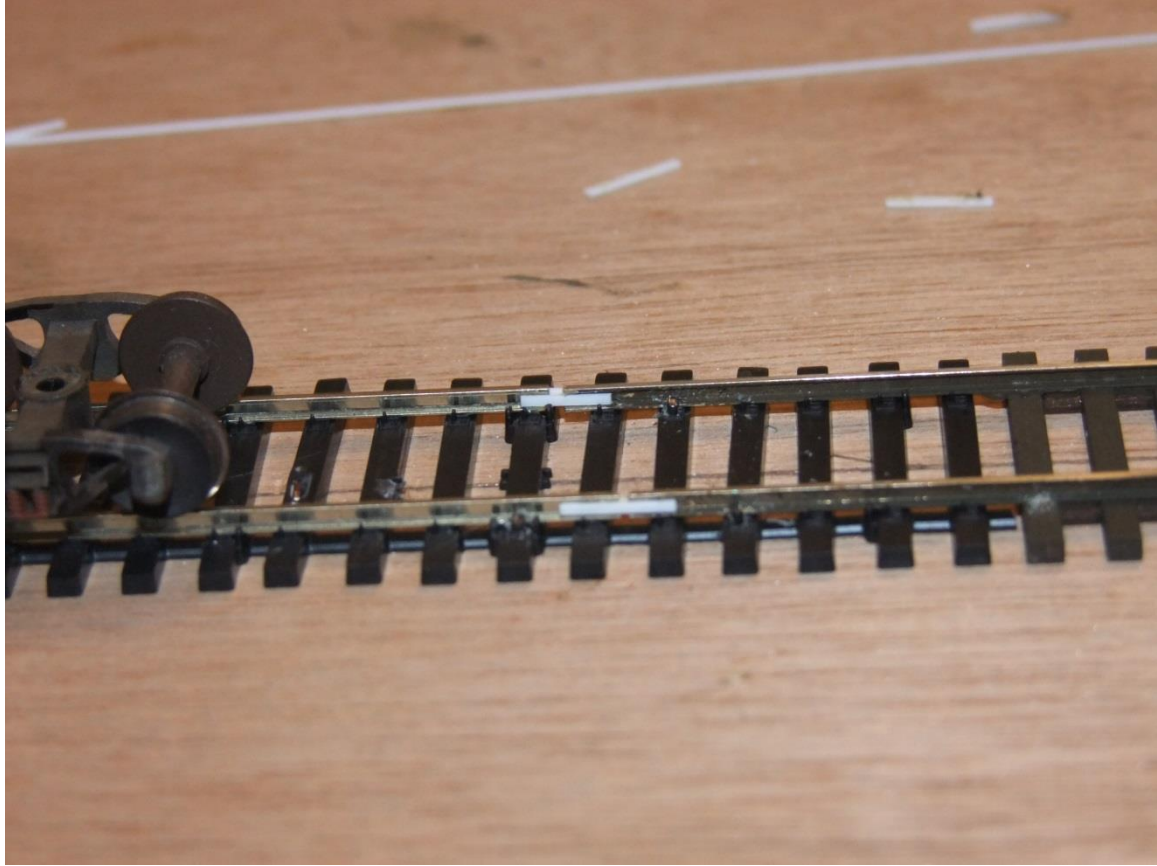
121

.020 x .030"
(0.5 x 0.75 mm)

10 Strips

Made in U.S.A.

EVERGREEN



UGLY!!!

This is what you want to replace





BUT IT LOOKS A LOT MORE PROTOTYPICAL IF YOU DO

USE WHICH EVER TYPE OF SWITCH
STAND YOUR PROTOTYPE USED



REASONS TO ELIMINATE GROUND THROWS

- WITH BULLFROGS YOU DO NOT NEED TO TOUCH THE TURNOUT OR A GROUND THROW NEAR THE TURNOUT. THIS ELIMINATES DAMAGE TO THE LAYOUT AND TRACK
- YOU CAN USE WHICH EVER MODEL SWITCH STAND CLOSELY RESEMBLES THE ONES YOUR PROTOTYPE USED – THIS INCREASES REALISM AND HELPS TELL THE STORY OF YOUR MODEL

DON'T BE THIS GUY!



YOU SHOULD NOT TO PUT GAPS IN AFTER THE TRACK IS DOWN. KNOW WHERE ALL THE ELECTRICAL GAPS WILL BE **BEFORE** YOU PUT DOWN ANY TRACK. DO YOU THINK THIS MODELER EVER WENT BACK TO “BACKFILL” HIS DREMEL TOOL DIVIT?

A BRIEF DESCRIPTION OF MY BENCHWORK

- 18 INCH WIDE DOMINOES
- CONSTRUCTED OF BASIC BOX BENCHWORK WITH SUB-ROADBED MADE OF HIGH GRADE $\frac{3}{4}$ INCH PLYWOOD AND COVERED IN $\frac{1}{4}$ INCH LUAN PLYWOOD
- THE SUB-ROADBED COULD ALSO BE CONSTRUCTED OF $\frac{1}{2}$ INCH PLYWOOD AND $\frac{1}{2}$ INCH HOMOSOTE. I DO NOT USE CORK.
- TRACK SPIKED TO THE LUAN FOR EASY REALIGNMENT AND REUSE OF TRACK MATERIAL

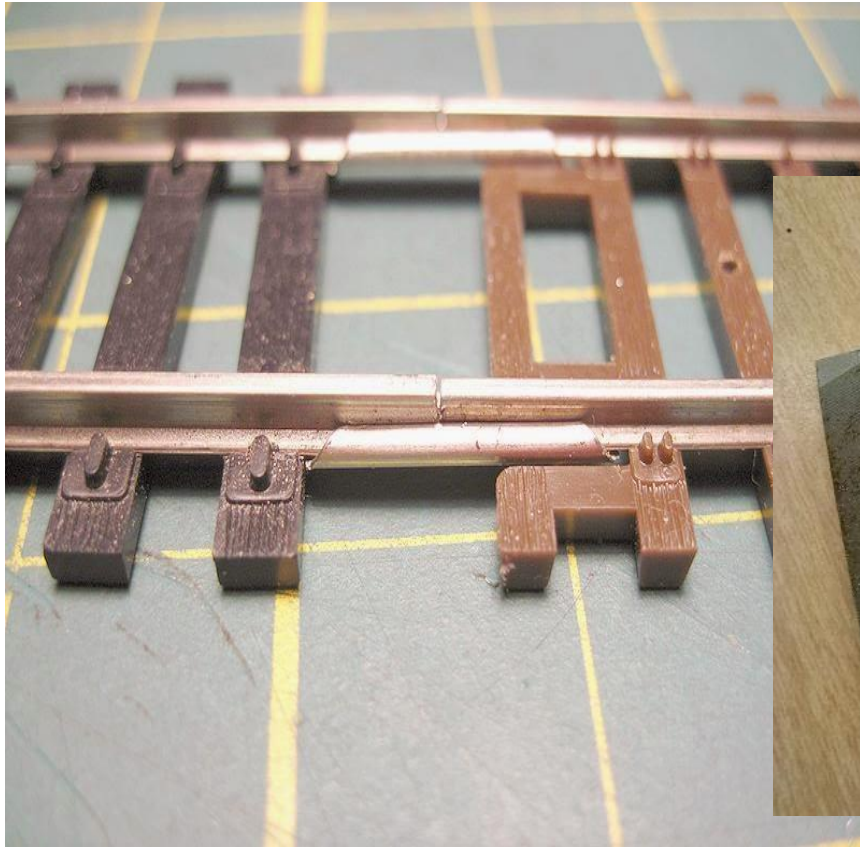
TWO HARD LEARNED TRUTHS

- 1. FRIENDS DO NOT LET FRIENDS GLUE TRACK TO ANY TYPE OF SURFACE. I KNOW THIS IS ALL THE RAGE IN MR ETC. BUT WHEN A PIECE OF FLEX TRACK COSTS \$9.00 YOU CAN EASILY DAMAGE THE TRACK AND YOU WON'T READIALLY REALIGN IT.
- 2. FRIENDS DO NOT LET FRIENDS GLUE TRACK TO ANY TYPE OF STYRAPHOME OR OTHER POROUS OR SOFT SURFACE.

TRUTHS CONTINUED

- IN CERTAIN INSTANCES I'VE RE-LAID AND RE-ALLIGNED TRACK IN THE SAME SMALL SPACE OVER SIX TIMES. I ALMOST NEVER SETTLE FOR THE ORIGINAL ALIGNMENT EVEN IF IT WORKS. "IF IT DOESN'T FLOW, IT ISN'T RIGHT."
- I'VE OPERATED A TOWN, THEN RE-LAID IT EVERY SIX MONTHS FOR TWO YEARS AFTER WE'VE OPERATED THE SECTION MANY TIMES. I DID THIS AFTER GETTING FEEDBACK FROM CREWS OPERATING THE SECTION WHO HAD DIFFERENT SKILL LEVELS, HEIGHT AND REACH.
- IF YOU SPIKE YOUR TRACK, IT IS EASY TO MOVE THE TRACK AND YOU DO NOT WASTE MATERIAL.
- IF YOU GLUE TRACK YOU WILL ALMOST NEVER MOVE IT AND YOU ARE STUCK WITH THE FIRST TRY.

TYPICAL RAIL JOINTS WITH REGULAR FLEX TRACK



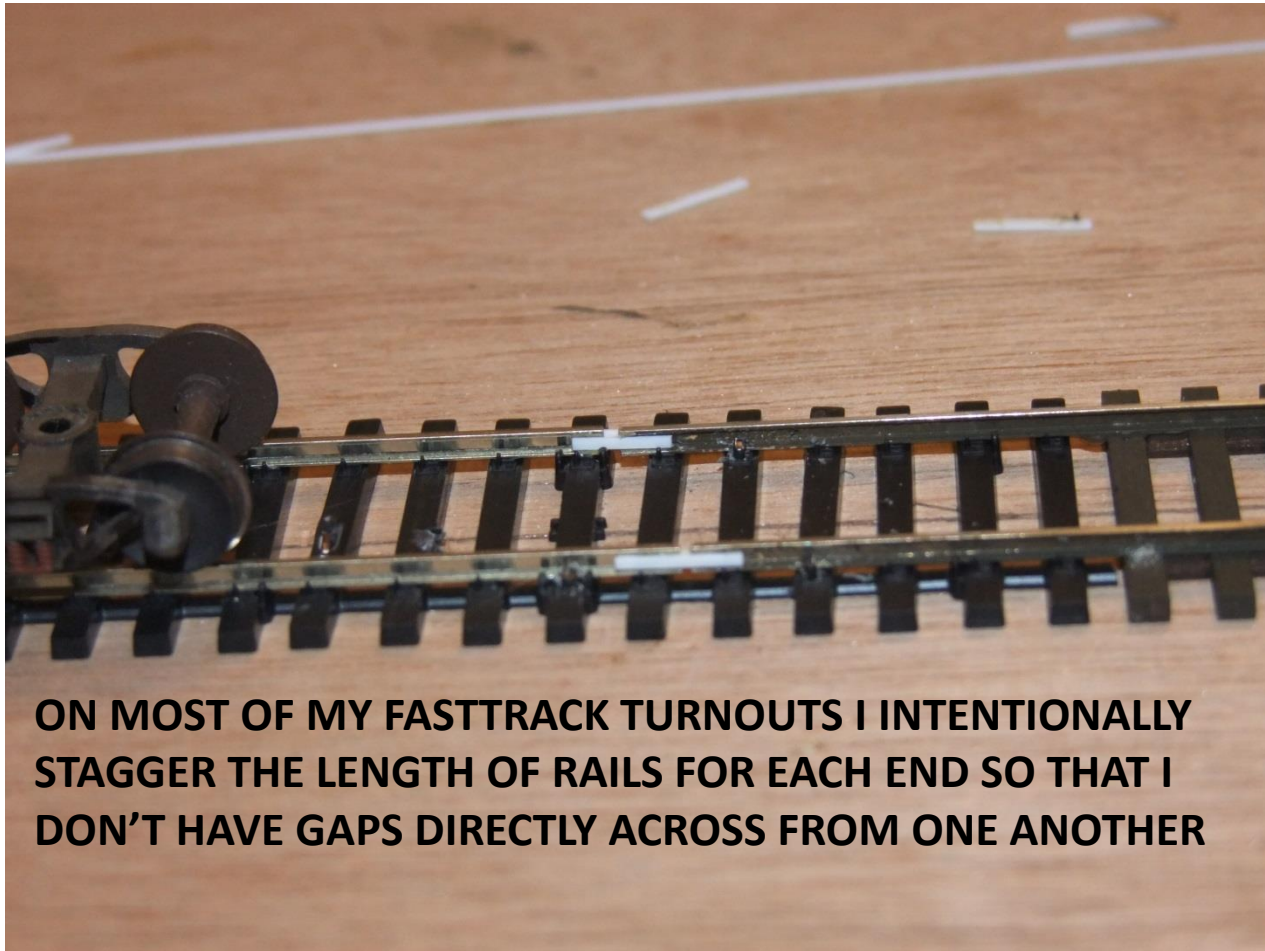
CONTINUED

(This gap
looks ugly!)



**NOT ONLY MUST YOU “BACK FILL” WITH INDIVIDUAL
TIES, BUT NOW YOU HAVE TWO JOINTS DIRECTLY
ACROSS FROM ONE ANOTHER, THIS IS NOT
PROTOTYPICAL**

JOINTS USING SCALE FISH PLATES



**ON MOST OF MY FASTTRACK TURNOUTS I INTENTIONALLY
STAGGER THE LENGTH OF RAILS FOR EACH END SO THAT I
DON'T HAVE GAPS DIRECTLY ACROSS FROM ONE ANOTHER**

FISH PLATE STOCK



**NORMAL FISH PLATES OR JOINT BARS ARE 3
SCALE FEET LONG OR 2 FEET LONG ON
MINOR SIDINGS**

FAST TRACKS RAIL ROLLER

